REMARKS/ARGUMENTS

Reconsideration of this application in light of the above amendments and following comments is courteously solicited.

Claim 3 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In order to overcome this rejection, claim 3 is amended so as to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 1 and 2 were rejected under 35 U.S.C. 102(b), as being anticipated by Nakamura et al. (JP11-083798) or Katsura et al. (JP07-306181), and rejected under 35 U.S.C. 102(e) as being anticipated by Staat (WO2002/061400A1).

Nakamura et al. discloses an electrophoresis member wherein a glass substrate 1 is bonded to a silicon substrate 2. The electrophoresis member has a window 6 which is formed by removing a portion of the silicon substrate 2 near a measuring chamber by anisotropic etching while remaining only a silicon oxide film 2a. Thus, detecting light for analysis is designed to pass through only the silicon oxide film 2a having a thickness of a few microns on the side of the silicon substrate 2. Thus, the quantity of light to be absorbed is decreased to improve the efficiency of detection.

However, Nakamura et al. fails to disclose or suggest any resin chips comprising two members of a resin material bonded to each other. Therefore, the electrophoresis member of Nakamura et al. cannot be produced in large quantities in a short time by injection molding or the like, since it is not a resin chip of a resin material.

That is, a method for producing an electrophoresis member of Nakamura et al., comprises the steps of: forming through

holes, which serve as inlets and outlets 5a-5d for a liquid sample or an electrophoresis solution, in a glass substrate 1; oxidizing a silicon substrate 2 to form a silicon oxide film 2b thereon; patterning the silicon oxide film 2b by photolithography technique, and etching the silicon substrate 2 by using the patterned oxide film 2b as a mask to form passage grooves 3 and 4; removing the silicon oxide 2b as the mask, and then, oxidizing the silicon substrate 2 again to form a silicon oxide film 2a to cover the passage grooves 3 and 4 with the silicon oxide film 2a; bonding the glass substrate 1 to the silicon substrate 2; patterning the silicon oxide film 2a, which is formed on the reverse of the silicon substrate 2, by photolithography technique, and etching the silicon substrate 2 by using the patterned silicon oxide film 2a as a mask, to expose the siliconoxide film 2a in a portion corresponding to a measuring chamber of the silicon substrate 2 to form a window 6. Thus, it is required to carry out a large number of steps in order to produce the electrophoresis member of Nakamura et al. Therefore, the electrophoresis member of Nakamura et al. cannot be produced in large quantities in a short time.

Katsura et al. discloses a method for forming a detection window for use in a capillary electrophoretic apparatus for analyzing a sample moving in a capillary due to electrophoresis. In the method of Katsura et al., in a detection window 61, a back groove 612 is formed on the reverse side of a silicon substrate, a positioning groove 610 having a V-shaped cross section crossing the back groove 612 is formed on the surface side of the silicon substrate, and a slit 611 is formed so as to pass through the silicon substrate between the top portion of the positioning groove 610 and the bottom of the reverse groove 612.

However, Katsura et al., fails to disclose or suggest any resin chips comprising two members of a resin material bonded to each other. Therefore, the capillary electrophoretic apparatus of Katsura et al. cannot be produced in large quantities in a short time by injection molding or the like, since it is not a resin chip of a resin material.

That is, a method for forming a detection window for use in a capillary electrophoretic apparatus of Katsura et al., comprises the steps of: forming silicon oxide films 70 on the surface and reverse of a silicon substrate 613 by thermal oxidation; patterning the silicon oxide film 70 in a central portion of the reverse of the substrate 613 to form a mask having an opening 70H; forming a back groove 612 in the central portion of the reverse of the substrate 613 by anisotropic etching using the mask; forming an impurity diffusion region 72 (used as an etching stopper layer) in a region in which the back groove 612 is formed; removing a boron glass film 71 (deposited on the silicon oxide film 70 in order to form the impurity diffusion region 71) and the silicon oxide film 70; forming silicon oxide film 73 on the surface and reverse of the substrate 613 by thermal oxidation; patterning the silicon oxide film 73 so as to cross the back groove 612 on the surface of the substrate 613, to form a mask having an opening 73H, and forming a positioning groove 610 in a central portion of the surface of the substrate 613 by anisotropic etching using the mask: removing the silicon oxide film 73 as the mask; and selectively removing the impurity diffusion region 72 to complete a slit 611 to complete a detection window 61. Thus, it is required to carry out a large number of steps in order to form a detection window for use in a capillary electrophoretic apparatus of Katsura et al. Therefore, the capillary electrophoretic

apparatus of Katsura et al. cannot be produced in large quantities in a short time.

Staats discloses an optical detection system wherein a groove extending a microfluidic channel 108 or a separation capillary 111 is formed in the reverse of a sample holder mount 122 for mounting thereon a microfluidic device sample holder 110 having the microfluidic channel 108 in the upper face thereof, or for mounting thereon a capillary holder 114 for holding thereon the separation capillary 111. Staats also discloses an optical detection system wherein a groove extending a separation capillary 111 is formed in the reverse of a capillary sample holder 130 for holding thereon a separation capillary 111.

However, Staats fails to disclose or suggest any resin chips which comprise a first member of a resin material having a groove, and a second member of a resin material bonded to the first member for covering the groove to define a passage between the first and second members. Staats also fails to disclose or suggest that a member of a resin material having a groove on one side thereof has a recessed portion on the other side so that the bottom portion of the groove has such a thickness that light easily passes through the bottom portion.

Specifically, in the optical detection system wherein the groove extending the microfluidic channel 108 or separation capillary 111 is formed in the reverse of the sample holder mount 122, the reverse of each of the sample holder 110 and the capillary holder 114 has no groove although the reverse of the sample holder mount 122 has the groove. Therefore, it is not possible to sufficiently improve the sensitivity of measurement in comparison with a resin chip according to the present invention, and it is required to additionally provide the sample holder mount 122 having the groove in the reverse thereof.

In the optical detection system wherein the groove extending the separation capillary 111 is formed in the reverse of the capillary sample holder 130, the surface of the capillary sample holder 130 has no groove although the reverse of the capillary sample holder 130 has the groove. Therefore, it is required to additional mount the separation capillary 111 on the capillary sample holder 130.

That is, Staats fails to disclose or suggest that a member having a groove on one side thereof has a recessed portion on the other side thereof, so that a resin chip capable of improving the sensitivity of measurement cannot be produced in large quantities in a short time by injection molding or the like.

Claims 1-11 were rejected under 35 U.S.C. 102(b) as being anticipated by Ashmead et al. (US 5,534,328).

Ashmead ('328) discloses an integrated chemical processing apparatus having a large number of laminated wafers of silicon or the like, the laminated wafers including wafers having grooves in the top and bottom faces thereof, and the laminated wafers being sandwiched between outer wafers of metal, ceramic, glass or the like. Ashmead ('328) also discloses that the surface of one of the outer wafers is irradiated with light from a light source 99.

However, Ashmead ('328) fails to disclose or suggest any resin chips which comprises a first member of a resin material having a groove, and a second member of a resin material bonded to the first member for covering the groove to define a passage between the first and second members. Ashmead ('328) also fails to disclose or suggest that a member of a resin material having a groove on one side thereof has a recessed portion on the other side so that the bottom portion of the groove has such a thickness that light easily passes through the bottom portion.

Moreover, Ashmead, ('328) fails to disclose or suggest only a part of a groove formed in a member is arranged in a measuring region in which a sample is to be irradiated with light. Therefore, Ashmead ('328) fails to disclose or suggest any resin chips capable of improving the sensitivity of measurement and of being produced in large quantities in a sort time by injection molding or the like.

Claims 3-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al., Katsura et al, or Staats, in view of Ashmead et al. (US 7,150,815).

Ashmead ('815) discloses a polymer-based microfluidic device having cooling channels 40, 50 adjacent to a separation channel 10. However, Ashmead ('815) fails to disclose or suggest that a member of a resin material having a groove on one side thereof has a recessed portion on the other side so that the bottom portion of the groove has such a thickness that light easily passes through the bottom portion. Ashmead ('815) also fails to disclose or suggest only a part of a groove formed in a member is arranged in a measuring region in which a sample is to be irradiated with light. Therefore, Ashmead ('815) fails to disclose or suggest any resin chips capable of improving the sensitivity of measurement and of being produced in large quantities in a short time by injection molding or the like.

Nakamura et al., Katsura et al. and Staats fail to disclose or suggest that a member of a resin material having a groove on side thereof has a recessed portion on the other side. Nakamura et al., Katsura et al. and Staats also fail to disclose or suggest that any resin chips capable of improving the sensitivity of measurement can be produced in large quantities in a short time by injection molding or the like.

Therefore, it would not have been obvious to one of ordinary skill in the art to combine the electrophoresis member

of Nakamura et al., the capillary electrophoretic apparatus of Katsura et al. or the optical detection system of Staats with the technique disclosed by Ashmead ('815).

Accordingly, it is believed that the amended claims patentably distinguish the invention from the prior art.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

It is submitted that the claims as amended herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

Respectfully submitted,
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I, Rachel Piscitelli, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on April 30, 2007.

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